Journal of Earth Science & Climatic Change

Commentary Open Access

Note on Small holder Farms Agriculture and Climate Resilience

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Abstract

Current approaches to geographic information dissemination to smallholders, such as the rural extension model, are limited, yet advancements in internet and communication technologies could help augment these processes through the provision of agricultural geographic information directly to farmers. We analysed recent ICT initiatives for communicating climate and agriculture-related information to smallholders for improved livelihoods and climate change adaptation.

Keywords: Agricultural industry; Smallholder farmers; Crop growth and yield; Geographic information

Introduction

The agricultural industry is supported by 500 million smallholder farms, responsible for approximately 56% of global agricultural production. Smallholder farmers are increasingly resource-poor and confronted by challenges associated with climate change, natural disasters, resource availability and access, and food insecurity. Global climatic changes are influencing crop growth and yield, water balances, input availability, and agricultural system management components, with ensuing impacts on farming practices. Smallholders are faced with both long-term climate stressors and short-term shocks [1].

Rapid advancements in geographic information technologies and the availability of geospatial data allow for sophisticated capture, analysis, storage, dissemination and access of information across space and time. Concurrently, advancements in information communication technologies have further increased the usability of geographic information derived from a diversity of sources [2].

Description

Geographic describes information with a reference to Earth's surface and near-surface, and geospatial data has been defined as location properties any descriptive information about the location or area of, and relationships among geographic features related to any terrestrial feature phenomena. We adopt the term geographic information data, despite much of the material reviewed employing the term geospatial. We consider geographic information to be any information to which location on the Earth is a relevant feature, including both explicit and implicit locational data. Geographic information used within the agriculture sector here termed agricultural geographic information is increasingly available to smallholders, yet uptake is limited. Despite a range of geographic information types, such as remote sensing, household surveys, or climate/market reports, accessibility and/or availability is often not in useful/usable formats. Traditionally, information provision to smallholders in developing countries is provided via agricultural extension organisations through farmer field schools, innovation networks and farming associations. However, resource constraints and the diverse needs of smallholders limit the flow of top-down information [3]. For example, resource constraints of agricultural extension staff have been identified as a challenge under climate change in the South Pacific and the lack of transparency and connectivity a constraint to information delivery in India.

We acknowledge that earlier review works exist on related topics with similar aims and methods to those we present here. The Food and Agriculture Organisation of the United Nations reviewed a decade of ICT advancements with applications to agriculture and rural development presenting important findings, such as the significant influence of elements like quality partnerships and the digital divide on project success. But this report was largely descriptive and based on a narrow selection of projects and therefore lacks the analytical depth and rigour associated with our systematic review of AGI initiatives. The World Bank also produced a report on ICT in agriculture, but a similar critique to above could be applied. Baumüller systematically analysed the impact of various mobile services for smallholder agriculture, offering useful lessons for future service developments and an assessment of current shortcomings, including a lack of useful empirical evidence and limitations to current methodologies for evaluating project impact. Our work differs in that it is not constrained to examining only mobile services, but includes a broader range of ICTs used in AGI initiatives, and specifically considers delivery of information of a geographic nature [4-5]. Duncombe also analysed mobile phone use for agriculture in developing countries, and again, our work examines a more technologically-diverse breadth of AGI initiatives. Further, our work includes the review of AGI initiatives found and described in multiple sources, as opposed to reviews based on only practice-based literature.

Acknowledgment

None

Conflicts of Interest

None

References

1. Matiwos H, Mitiku E (2022) Effects of climate variability on livestock productivity and pastoralists perception: The case of drought resilience in Southeastern Ethiopia. Vet Anim Sci 3(1); 16:100-240.
2. Esther C, Ioan F, Helen R (2022) Building community resilience in a context of climate change: The role of social capital. Ambio 51(6):1371-1387.

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Received: 29-Apr-2022, Manuscript No. jescc-22-62327; **Editor assigned:** 02-May-2022, PreQC No. jescc-22-62327 (PQ); **Reviewed:** 16-May-2022, QC No. jescc-22-62327; **Revised:** 20-May-2022, Manuscript No. jescc-22-62327(R); **Published:** 27-May-2022, DOI: 10.4172/2157-7617.1000620

Citation: Mehtha R (2022) Note on Small holder Farms Agriculture and Climate Resilience. J Earth Sci Clim Change, 13: 620.

3. Maria FD, Veronica GM (2022) Adjustments of carbon allocation and stomatal dynamics by target localized strategies to increase crop productivity under changing climates. J Plant Physiol 272:153-685.

4. O'Neill EA, Morse AP, Rowan NJ (2022) Effects of climate and environmental variance on the performance of a novel peat land-based integrated multi-trophic aquaculture (IMTA) system: Implications and opportunities for advancing research and disruptive innovation post COVID-19 era. Sci Total Environ 5(1); 819:153-073.

5. Akiko H, Yuji K, Haruka O (2022) Global estimates of stress-reflecting indices reveal key climatic drivers of climate-induced forest range shifts. Sci Total Environ 6(10); 824:153-697.